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juices had remained as sweet and clear as when they were prepared in London. * * * * I took advantage of the clear weather this year to investigate the action of solar light on the development of life in these infusions, being prompted thereto by the interesting observations brought before the Royal Society by Dr. Downs and Mr. Blunt, in 1877. The sealed ends of the flasks being broken off, they were infected in part by the water of an adjacent brook, and in part by an infusion well charged with organisms. Hung up in rows upon a board, half of the flasks of each row were securely shaded from the sun, the other half being exposed to the light. In some cases, moreover, flasks were placed in a darkened room within the house, while their companions were exposed in the sunshine outside. The clear result of these experiments, of which a considerable number is made, is that by some constituent or constituents of the solar radiation an influence is exercised inimical to the development of the lowest infusoria. Twenty-four hours usually sufficed to cause the shaded flasks to pass from clearness to turbidity, while thrice this time left the exposed ones without sensible damage to their transparency. This result is not due to mere differences of temperature between the infusions. On many occasions the temperature of the exposed flasks was far more favorable to the development of life than that of the shaded ones. The energy which in the cases here referred to prevented putrefaction was energy in the radiant form. In no case have I found the flasks sterilized by insolation, for, on removing the exposed ones from the open air to a warm kitchen, they infallibly changed from clearness to turbidity. Four-and-twenty hours were in most cases sufficient to produce this change. Life is, therefore, prevented from developing itself in the infusions as long as they are exposed to the solar light, and the paralysis thus produced enables them to pass through the night time without alteration. It is, however, a suspension, not a destruction, of the germinal power, for, as before stated, when placed in a warm room, life was invariably developed. * * * It would also be interesting to examine how far insolation may be employed in the preservation of meat from putrefaction.—*Professor Tyndall before British Association, 1881.*

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SCIENTIFIC NEWS.

— The Annual Report of the Chief Signal Officer for 1881, show that this Bureau was never in more efficient order, nor doing more to promote scientific as well as purely practical interests. For example Gen. Hazen reports that he has endeavored to bring this service into active sympathy and coöperation with the ablest scientific intellects of the country. "In this direction and in response to my request, the Natural Academy of Sciences has appointed an advisory committee of consulting specialists with which I may confer as occasion demands. I take pleasure in acknowledging this courtesy as showing the establishment of more intimate relations between the scientific interests of the United States and the Signal Service."

A Scientific and Study Division, was established January 27, 1881, for the purpose of scientific research and investigation into the laws of meteorology. Connected with this division are consulting specialists, who are employed as occasion may require. To this division also are referred all questions relating to standard measurements, altitudes of signal stations, and the preparation of tables for the reduction and the conversion of meteorological observations.

During the past year stations of observation on the habits and ravages of the Rocky Mountain locusts or grasshoppers, were established in those sections that the experience of past years has shown to be most exposed to the ravages of these pests. These stations were at Omaha, Grand Island, North Platte, and Sidney, Nebr.; Cheyenne, W. T.; Denver, Colorado Springs, and Pueblo, Col.; Ft. Sill, Ind. T.; Ft. Elliott and all other stations on the United States military telegraph lines in northern, central and southern Texas, and those on the Northwestern military telegraph line in Dakota, and Montana. Where civilians were employed in making the observations, their services were voluntary and without compensation, the government bearing the necessary expenses for stationery and telegraphing.

It is gratifying to state that not a single report of the ravages of locusts has reached this office, and their presence has been announced only at Grand Island, Nebr.; Ft. Supply, Ind. T., and Ft. Elliott, Texas, but in no instance has any danger been reported.

— In continuance of the biological explorations made by the U. S. Coast and Geodetic Survey, M. Alexander Agassiz spent portions of last March and April at the Tortugas and Key West. On the days when the weather was not favorable for work in collecting surface animals, Mr. Agassiz cruised among the reefs and examined carefully the topography of the different groups of corals characteristic of the Florida reefs, with reference to the light they threw on the share the different species of coral have in the formation of the reef, and he has collected data from which he expects to construct a map, showing the position of the different species of corals within the area occupied by the reef-builders of the Tortugas. It was found that the members of the surface fauna of the Atlantic coast are inhabitants of the surface of the Gulf stream, which are driven on the northern shores by the prevailing southwesterly winds during the summer and autumn months. Much of this surface work during March and April reminded him of similar work done at Newport from the end of July until late in September; but, of course, the number of specimens was far greater at the Tortugas. The surface fauna of the Gulf stream can undoubtedly be best studied at the Tortugas, though important additions to our knowledge of it have been made at Charleston, S. C., and at Beaufort, N. C., and along the coast of New Jersey, of Rhode Island, and of Southern Massachusetts. It is remarkable that the beautiful purple floating shell (Janthina), which is so common at the Tortugas, should not find its way further north than off Cape Hatteras, in common with other surface forms. There are also found at the Tortugas a large number of pelagic crustaceæ in their larval stages, among them Phyllosoma and the nauplius stage of a Peneus, similar to that observed by Fritz Müller; also multitudes of young Annelids, Molluscs, Actiniæ, the planulæ of several of the corals, Echinoderm embryos, and a host of young pelagic fishes, among which he mentions the young of the flying fish and Leptocephali. For the study of the young stages of fishes and of Acalephs the Florida reefs present an unrivaled field of observation, but the number of pelagic Foraminifera was unexpectedly small.

— A work on the Gymnotus, or electric eel, was presented to the Paris Academy the other day by M. Du Bois-Reymond. It gives the results of recent researches in Venezuela by Dr. Sachs, who went out some five years ago, at the suggestion of the Berlin physiologist, to study the creature in its habitat. Dr. Sachs had not completed the working up of his material for publication when, unhappily, he lost his life on a glacier in the Tyrol, in 1878. His work has been extended by M. Fritsch, with the aid of numerous specimens and preparations of the fish brought home. Among other things, M. Fritsch has succeeded in proving, with all but certainty, the development of the electric organs from striated muscles by metamorphosis. Various obscure points have been elucidated.

— Mr. Alfred G. Lock, F. R. G. S., of 16 Charing Cross, London, England, is preparing a book on gold mining, in which he desires to describe every process and every machine of recognized value in use, both in alluvial and quartz mining. He wishes also to treat fully of the mineralogical associations and geographical occurrence of gold in all parts of the world, and to give maps showing the geographical position of all the gold fields known to exist, the strike of the reefs and the rivers whose lands are known to be gold bearing. The United States being the greatest gold producer and its gold saving machinery being the most elaborate, he desires to give it the prominent position in the book which its importance demands. He desires therefore to procure all papers, reports, photographs, or other illustrations of the subject. In all cases the sources of his information will be fully acknowledged.

— The Providence Lithograph Company are about to publish the Chautauqua Scientific Diagrams. Series No. 1, *Geology*, to be edited by Professor A. S. Packard, Jr. Price $6. The series will consist of ten chromo-lithographic charts, 33 × 23 inches. The subjects are mostly restorations of Silurian, Devonian, Carboniferous, Mesozoic, Tertiary and Quaternary fossil plants and animals. While the series is designed for popular audiences, they will be found useful in colleges and high schools.

— Edward Wethered, F. G. S., of Hillylands, Weston Park, Bath, England, has become sub-editor of the *Geological Record*, for America, and he asks the coöperation of all geologists by sending to his address all pamphlets or reports, connected directly or indirectly with the geology of this country. His connections will commence with the volume for 1879, and he says that a great effort will be made to bring it up to the present time.

— Dr. John W. Draper, the eminent scientist, and author of Human Physiology, a History of the Intellectual Development of Europe, the History of the Conflict between Religion and Science, numerous memoirs on chemical and physical subjects, and a History of the American Civil War, died at Hastings-on-the-Hudson, Jan. 4, aged 71. He was born in England, May 5, 1811.

— Professor Arch. Geikie, Director of the Geological Survey of Scotland, has just been appointed Director-General of the whole of the Geological Survey of Great Britain, and also Director of the Geological Museum, Jermyn street, London. He will therefore resign his professorship in the University of Edinburgh and make his residence in London.

— Dr. Chr. G. A. Giebel, an eminent geologist and author of a work on bird-lice and other insects, died at Halle, Nov. 14. Professor P. G. Lorentz, a well known German botanist, author of a work on mosses, died at Concepcion, in Uraguay, aged 46.

— Robert Mallet, whose researches on earthquakes have made his name well known, died in London, Nov. 5, aged 71. His Earthquake Catalogue was completed, says *Nature*, with the aid of his son, now Professor J. W. Mallet, of Virginia.

— Professor J. E. Hilgard, after a term of service of thirty-four years as assistant, has been appointed Superintendent of the U. S. Coast and Geodetic Survey; a most fitting appointment.

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PROCEEDINGS OF SCIENTIFIC SOCIETIES.

California Academy of Sciences, Nov. 4.—The announcement of the generous gift of $20,000 by Charles Crocker, Esq., recorded in the December Naturalist, was made.

A paper by Professor Davidson, on the Transit of Mercury, accompanied with drawings, was then read, and Dr. Robert E. C. Stearns read a paper on " The Botanical Relations of *Physianthus albens*: the structure of its flowers and their peculiarities as an insect trap." He referred to this plant as related to groups which possess various important economical characters, furnishing peculiarly fertile fields for investigators of pharmaceutical and organic chemistry. Dr. Stearns then exhibited many beautiful specimens of these flowers, each one of which had entrapped an